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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,083	03/13/2001	Katsutoshi Nosaki	107348-00096	9107

7590 04/22/2003

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EXAMINER

PARSONS, THOMAS H

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 04/22/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/804,083

Applicant(s)

NOSAKI ET AL.

Examiner

Thomas H Parsons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Response to Amendment

This is in response to the Amendment filed 11 March 2003.

Claim Rejections - 35 USC § 103

1. The rejection of claims 1-8 under 35 U.S.C. 103(a) as being unpatentable over Suga et al. (5,667,647), and further in view of Dempsey et al. (4,311,569) has been **maintained**.

Response to Arguments

2. The Applicants' arguments filed 11 March 2003 have been fully considered but they are not persuasive for the following reasons:

- a. Applicants argue that "...the modification to Suga proposed by the Office Action is contrary to the specific teachings of Suga, which clearly explains the purpose for providing an anode with irregular surface and a cathode with an irregular surface is to improve electrolytic efficiency.

In response, the Examiner disagrees because while it is agreed that Suga et al. teach an anode and a cathode construction to improve efficiency, Dempsey et al. also teach an anode and cathode construction that not only improves process efficiency but offers the added advantage of providing improved stability and reduce costs.

- b. Applicant argues "If the proposed modification or combination of the prior art would change the principle of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* obvious."

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In response, Suga et al. disclose an electrolytic cell for generating oxygen and hydrogen gas by electrolyzing water wherein the electrolytic cell comprises an anode and a cathode separated by an ion exchange membrane. Dempsey et al. also disclose an electrolytic cell for generating oxygen and hydrogen gas by electrolyzing water wherein the electrolytic cell comprises an anode and a cathode separated by an ion exchange membrane (film). Accordingly, the principle of operation of both electrolytic cells is the same.

Furthermore, substituting the Suga et al. electrolytic cell with that of Dempsey et al. would not require a substantial reconstruction or redesign of elements.

Nor would such a substitution decrease the electrolytic efficiency of the electrolysis operation as the Dempsey et al. cell provides structural features that would provide at least comparable if not an improved efficiency as well as the added advantages of improved stability and reduce costs.

d. In response to applicants' argument that applied art of record is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the applied art of record is in the field of applicant's endeavor. Both Suga et al. and Dempsey et al. are concerned with the electrolysis of water to produce oxygen and hydrogen gas wherein the electrolytic cell comprises an anode and a cathode separated by an ion exchange membrane.

DETAILED ACTION

Double Patenting

3. Applicant is advised that should claims 1-2, 4-5 and 7 be found allowable, claims 9-10, 12-13 and 14 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof.

When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites "...according to claim 1, wherein each cathode is plate shaped." It is unclear as to how the further limits claim 1 as claim 1 also recites that the cathode is plate shaped.

Claim 8 recites "...according to claim 1, wherein each anode is plate shaped." It is unclear as to how this limitation further limits claim 1 as claim 1 also recites that the anode is plate shaped.

Claim Rejections - 35 USC § 103

6. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suga et al. (5,667,647), and further in view of Dempsey et al. (4,311,569) *with the help of the prior art*

Claim 1: Suga et al. disclose an electrolytic apparatus comprising a plurality of electrolytic cells each having an ion exchange film, an anode, and a cathode, the anode and cathode being arranged on opposite sides of the ion exchange film, respectively, the electrolytic cells being developed on a hypothetical plane and electrically connected in series to one another (Figure 1(A) showing an electrolytic cell having an ion exchange film 3, electrodes 7 of positive (anode) and negative pole (cathode) and vertically oriented on a horizontal plane; Figure 3 showing a plurality of electrolytic cells connected in series; col. 1:10-27; col. 1:56 through col. 2:4; col. 3: 6-8 and 53-58).

Suga et al. do not disclose a solid polymer electrolyte membrane, and plate shaped anodes and cathodes having a uniform thickness throughout.

Dempsey et al. disclose in Figures 1 and 2 a solid polymer electrolyte membrane (13), and a plate shaped anode (11) and a cathode (12) having a uniform thickness throughout (col. 4:44-62; and, col. 5: 26-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the electrolytic cell with the electrolytic cell of Dempsey because both are concerned with an electrolytic cell for gas generation and Dempsey et al. teach an electrolytic cell that would have provided improved performance, improved stability and reduced cost by using catalytic electrodes to concentrate or produce gases by water electrolysis.

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Claim 2: Suga et al. disclose a solar cell serving as a power supply for the plurality of water electrolytic cells (Figure 3 showing solar power supply 23 comprising solar collector 24; and, col. 4: 51-61).

Claim 3: Suga et al. disclose that the anodes of the plurality of electrolytic cells are disposed on one hypothetical plane, and the cathodes of the plurality of electrical cells are disposed on another hypothetical plane, and a single water/oxygen flow path and a single hydrogen flow path are shared by the plurality of water electrolytic cells (Figure 3 showing a plurality of electrolytic cells wherein the plurality of anodes and cathodes are oriented on separate vertical planes and flow paths 13a and 13b shared by the electrolytic cells connected in series; col. 3: 59-col. 4:39).

Claims 4 and 5: The Suga et al. combination discloses a panel shaped solar cell connected to the plurality of electrolytic cells (Figure 3 showing solar collector 24 which appears to be panel shaped; and col. 4: 51-61) but does not disclose that the solar cell is superposed on the plurality of electrolytic cells.

However, it has been held that the solar cell which appears to read on that disclosed by the Suga et al. combination except with regard to the position of the solar cell is unpatentable as it has been held that claims to a solar cell which read on the prior art except with regard to the position of the solar cell were held unpatentable because shifting the position of the solar cell would not have modified the operation of the device. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

Claims 6-8: The Suga et al. combination does not disclose that each water electrolytic cell is laminated

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Dempsey et al. in Figures 1 and 2 disclose that the water electrolytic cell is laminated (i.e., anode 11 and cathode 12 are bonded directly to opposite surfaces of the solid polymer electrolyte membrane 13) and wherein anode 11 and cathode 12 are plate shape (i.e., the electrodes are thin electrodes bonded to membrane 13) (col. 2: 12-17; and, col. 7: 7-11 and 18-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was substituted the electrolytic cell with the electrolytic cell of Dempsey et al. for the reasons as set forth in claim 1 above.

Claims 9 and 15: The rejection of claims 9 and 15 are as set forth above in claim 1.

Claims 10 and 16: The rejection of claims 10 and 16 are as set forth above in claim 2.

Claim 11: The rejection of claim 11 is as set forth above in claim 3.

Claims 12 and 13: The rejection of claims 12 and 13 are as set forth above in claims 4 and 5.

Claim 14: The rejection of claim 14 is as set forth above in claim 6.

Claim 15: The rejection of claim 15 is as set forth above in claim 3 wherein further Suga et al. in Figure 3 show the water electrolytic cells disposed side by side.

Claim 16: The rejection of claim 16 is as set for above in claim 10.

Claim 17: The rejection of claim 17 is as set forth above in claim 3.

Claim 18: The rejection of claim 18 is as set forth above in claim 4.

Claims 19 and 20: The rejection of claims 19 and 20 are as set forth above in claims 6-8.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H Parsons whose telephone number is (703) 306-9072.

The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Thomas H Parsons
Examiner
Art Unit 1745

April 14, 2003


Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700